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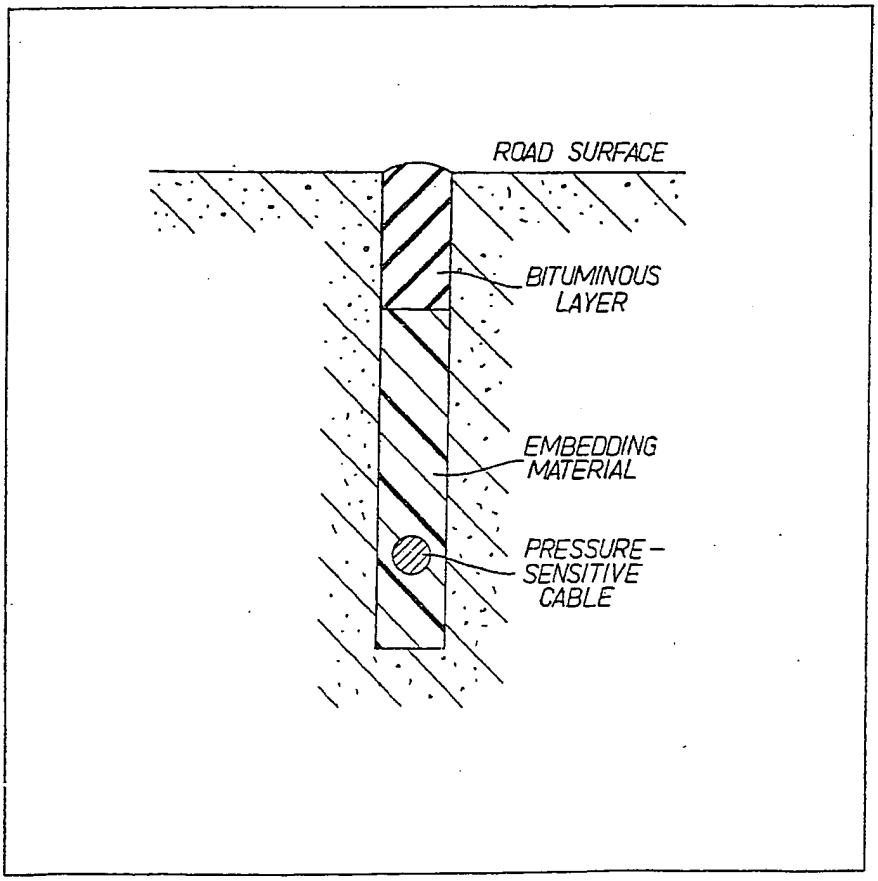
(54) VEHICLE PRESENCE DETECTOR

(57) Method of embedding pressure-sensitive cables in a road surface comprising cutting a slot in a roadway, pouring bedding material such as a sealocrete into the slot, resting the cable on the material, pouring more bedding material into the slot to cover the cable and sealing the slot with a layer of bitumen.



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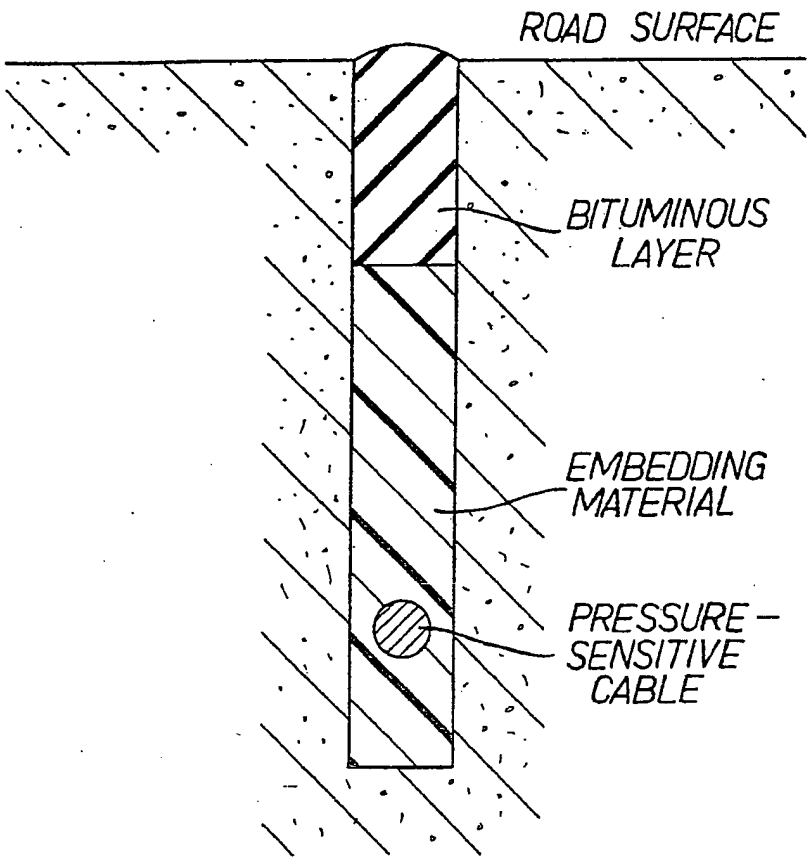
ROAD SURFACE
BITUMINOUS LAYER
EMBEDDING MATERIAL
PRESSURE-SENSITIVE CABLE

SPECIFICATION

A TECHNIQUE FOR EMBEDDING PRESSURE-SENSITIVE CABLES IN A ROAD SURFACE TO MINIMISE MECHANICAL RESONANCE

This invention relates to the embedding of Pressure-Sensitive Cables in a Road Surface or the like.

Pressure-sensitive cables, mounted in or on road surfaces, have been used for some years to give an indication of the extra loading produced when a vehicle wheel rolls over them and thus to detect the presence of a vehicle. Cables mounted on the road's surface have a short life. When buried cables are used mechanical methods have been used to transfer the compression loading on the road surface due to a vehicle wheel down to the pressure-sensitive cable. The mechanical components used have resonances predominantly in the low frequency part of the spectrum causing the signal produced by the cable to lack definition.

According to the present invention a method of embedding a cable in a roadway or the like comprises making a slot in the roadway or the like, pouring a first layer of bedding material into the slot, placing the cable on the first layer of bedding material, covering the cable with a second layer of bedding material and filling the slot at least substantially level with the roadway with a bituminous material.

An exemplary embodiment of the invention will now be described with reference to the accompanying drawing which is a sectional side view of an embedded cable.

Referring now to the drawing a pressure sensitive cable 1 is set into a slot 2 in a road surface 3, the cable being covered with and set into bedding material 4, the slot being finally filled with a bituminous layer 5.

The slot 2 is cut across each lane of a road to a depth of about 50mm and width 7mm. A first layer of bedding material is poured into the slot; the cable is placed in the slot resting on the first layer of bedding material and a second layer is then poured into the slot to cover the cable as shown. The layer of bitumen 5 is finally poured into the slot to fill it to the approximate level of the road surface. Larger signals are produced if the bitumen surface is convex and slightly proud of the average road level.

Typical dimensions for installations that have been used successfully are:

Slot length — 5m to 10m
Depth of lower bedding material — ~8mm
Depth of upper bedding material — ~28mm
Depth of bituminous layer — ~14mm

The embedding material used may be COULDPOUR EMBED manufactured by SEALOCRETE. The top layer 5 of bitumen is used because it sets in a few minutes whereas the embedding material takes many hours to harden fully. The use of a bituminous layer thus allows the road to be used almost immediately after the emplacement.

The compliance of the embedding material should be considerably greater than that of the road material so that a large mechanical mismatch exists at the interface region. Such a mismatch assists in channelling the compression energy produced by a wheel which is approaching or receding from the slot.

The embedding material should adhere firmly to the slot walls in order to assist in dumping out any mechanical vibrations which exist after the wheel has passed over the slot.

The natural resonant frequency of the embedding material block must be high, e.g. greater than 1kHZ.

The main advantages of this embedding technique are as follows:

The embedding material is waterproof which protects the cable from damage by ingress of moisture.

The embedding material is in direct contact with the pressure-sensitive cable which assists the transfer of compression energy from the road surface to the cable.

Owing to its protected position and the absence of any moving mechanical parts the cable mounting system has a long life.

CLAIMS

1. A method of embedding a cable in a roadway or the like comprising making a slot in the roadway or the like, pouring a first layer of bedding material into the slot, placing the cable on the first layer of bedding material, covering the cable with a second layer of bedding material and filling the slot at least substantially level with the roadway with a bitumous material.

2. A method as claimed in claim 1 utilising a bedding material having a compliance which is greater than that of the material from which the roadway is made and having the characteristic of adhering firmly to the walls of the slot.

3. A method of embedding a cable as claimed in claim 1 or claim 2 wherein the embedding material used is COULDPOUR EMBED.

4. A method of embedding a cable as claimed in any preceding claim wherein the bitumous material is arranged to project above the level of the road surface and to be finished with a convex surface.

5. A method of embedding a cable in a roadway or the like substantially as hereinbefore described with reference to the accompanying drawing.

6. A detector cable laid in a roadway or the like by a method as claimed in any preceding claim.

7. A vehicle detector system including a detector cable as claimed in claim 6.

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